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## NATURAL HISTORY AT THE INTERNATIONAL FISHERIES EXHIBITION.\*

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WHEN investigating fisheries, their present uses and the benefits which might be derived from them, the inquirer soon becomes conscious of the necessity of studying many branches of "natural history," both in the vegetable and animal kingdoms, without a competent knowledge of which his labours will often be thrown away, or the results of his researches useless, if not positively misleading.

Fisheries are variously regarded by different classes; thus the fisherman chiefly concerns himself as to what he can obtain from them at the present time, regardless of suitable provisions for the next year's supply. The public mainly interest themselves in the cost of the fish as disposed of for food; while the scientific economist bases his conclusions respecting the value of fisheries in accordance with their produce, and should the supply be unequal to the demand he mostly advocates increased killing powers by the employment of more destructive agencies, erroneously believing that the stock in the sea is inexhaustible.

The naturalist and fish culturist ought to approach the question from an entirely different point of view; he should ascertain the life-history of all forms of fishes, not merely such as serve for human food, but also of those which form the

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sustenance of the more predaceous kinds. He should endeavour to collect reliable information respecting the plants and animals which afford them sustenance and shelter, as well as ascertain what are their enemies or their friends, and what conditions favour the presence or absence of either class. Irrespective of the foregoing, he should consider the relationship of temperature, currents, soils, and the various conditions of the water in which they reside, to their migrations, growth, health, and reproduction. He should also ascertain whether fish are increasing in numbers, decreasing, or if the supply remains unchanged; if the size of those captured is augmenting or lessening; if their condition is better or worse than it was. Should investigations lead him to conclude that fisheries are being unduly depleted, he should carefully note in what families of fish such is occurring, if possible the cause; while in marine forms it is likewise necessary to inquire if fishermen have to go further out to sea to obtain their captures, if the killing powers of their implements have increased, and whether more men are now required to obtain the same amount of fish than was the case a few years previously. Lastly, it may be observed that, unless the investigator is able to distinguish the various species, he may easily imagine that he sees in some small forms, as the Solenette (*Solea minuta*), the young of the more valuable kinds as the Common Sole (*S. vulgaris*), whereas he is merely examining one sort that is worthless, except as food for the larger kinds.

Our fresh-water fishes are divisible into the river or "fluviate" and the "lacustrine" or lake forms, while our marine ones may be considered as shore or "littoral" and "pelagic" or sea-species; these last being again subdivided into such as are generally found near the surface, at greater or mid-depths, and abyssal residents, or such as live in the deep sea, below the limits to which the sun's rays penetrate.

Fresh-water fishes may be permanent residents therein, as Carps; "anadromous," or merely visitants from the ocean for the purpose of depositing their spawn, and generally, but not invariably, leaving their young to be reared there, as the Salmon; "catadromous," or such as reside in fresh waters, visiting the littoral zone or sea in order to breed, as Eels, the young of which ascend into and are reared in our rivers.

To meet the destructive agencies to which the eggs and young

are subjected, fish are provided with a large amount of ova, which is mostly sufficient to counterbalance natural waste. Thus eleven millions of eggs have been taken from a 21 lb. Codfish; 550,000 from a Mackerel; 239,775 from a 4 lb. Brill; while a Salmon deposits about 800 for every pound's weight of the parent fish. Although most forms are polygamous, some are monogamous. The period of the year at which spawning occurs, the size of the eggs, the depth of water in which they are deposited, the time they take incubating, and the places selected for the ova, are exceedingly varied.

The eggs of Cod float in the sea until the young emerge, those of the Herring sink to the bottom, where, by means of a glutinous substance, they are attached to sea-weeds, rocks, and other objects; those of some species of flat fishes float so long as the water is agitated, subsiding when it is smooth. One form of Sea-sucker (*Lepidogaster*) affixes its eggs to the inside of a dead shell as a butterfly does to a leaf. The Garfish (*Belone*) has filaments springing from the outer covering of its ova, which enables them to adhere together in a mass, or attach themselves to contiguous substances. Anadromous forms deposit their eggs in running waters, but in different ways; thus the Smelt affixes its ova to planks, stones, &c., near high-water mark; the Salmon and Trout cover theirs with gravel; while the Grayling deposits it on the bed of the river. Perch and most Carps attach their eggs to water-weeds, Sticklebacks construct a nest, while in the tufted gilled fishes, represented by the Pipe- and Horse-fishes, the male undertakes the functions of a nurse, the eggs for this purpose, up to the period of the evolution of the young, being retained between the ventral fins, as in certain Pipe-fishes (*Solenostomus*), in tail-pouches, as in Horse-fishes (*Hippocampus*), or in receptacles on the breast or abdomen, as in the Pipe-fish (*Doryrhamphus*), or merely in two rows in the same position, as in *Nerophis*. The males of some tropical Sheat fishes or Siluroids also perform maternal duties by carrying the eggs about in their mouths until the young are hatched. In some forms, as Lampreys, the expulsion of the roe is mechanically assisted by the two parents fixing their sucker-like mouths to a convenient rock and entwining themselves round one another. Also in Carps, as in the common Goldfish, the male has been observed to roll the female over and over at the bottom of an aquarium until her eggs have become expelled.

Hybrid fishes are likewise deserving of great attention, as in fish-culture crosses between the Trout and the Charr have proved most successful, while the stocking of fresh waters by artificial means, and latterly the sea, are among the most satisfactory accomplishments of modern fish-culturists and naturalists.

Young fishes for varying periods after birth are sustained by the nutriment contained in the yolk of the egg or dependent umbilical sac, and during this period they have numerous enemies watching to make them their prey. Unable to stem strong currents, they are generally to be found concealed near the sides of streams or ponds, or else under the shade of stones, leaves of water plants and grasses; while the marine species are among the Algæ in the sea, or disporting themselves in the sunshine, and these places may be considered their nurseries, which should not only be left undisturbed, but protected from predaceous foes. As the yolk sac becomes absorbed, the fry of fish have to seek for their food, whether of a minute vegetable or animal character, and it is then that the eggs and young of other lower classes of animals (the Invertebrata) become invaluable for their subsistence.

In some places around our coasts or in fresh or brackish waters are various kinds of sea-weeds or Algæ which in the sea decrease in abundance with increasing depth, or, should they drift into deep water, they fall to pieces, sink, and form the basis of soft black mud, in which many forms of invertebrates find their food, while in their turn they afford sustenance for fishes. Besides sea-weeds being useful along our coasts as providing food for fishes, places for depositing their spawn, nurseries for sheltering and rearing the fry, there are likewise forms, some of which are microscopic, floating in vast quantities over the surface of the deep sea, as the so-called Sargassum, or gulf-weed.

Sponges, in both their fresh-water and marine kinds, and which equally belong to the group Protozoa, were long considered by some authors to be vegetable, by others to be animal organisms. The horny skeletons of some species are exceedingly useful for domestic purposes, while those of commerce are to a great extent brought from the Grecian Archipelago, the Red Sea, and the Bahamas, where they are obtained by divers.

Many of the Cœlenterata, as the compound colonies of the fixed and plant-like Sea Firs (*Sertulariidae*) and their allies, are



found in our seas, some in large quantities, and they are consumed by fish and other marine animals. There are also in this group the Jelly-fishes, Medusæ, which, during the summer and autumn months, are found floating in the ocean around our coasts, and occasionally, under their umbrella-like discs, young fish have been observed to obtain refuge from the pursuit of their enemies.

Corals among the Actinozoa in many ways hold a most important place, while their hard structures are exceedingly diversified and interesting. Commercial forms are principally obtained from the Mediterranean, the Red Sea, Persian and Arabian Gulfs, the Mauritius, the Islands of the Malay Archipelago, Japan, &c.; while the reef-constructing species are distributed, and can only exist where the mean temperature of the sea is not below 66°. The coral reefs are classed as forming Fringing Reefs, Barrier Reefs, and Atolls. These reefs are largely frequented by fish, some of which possess most gorgeous colours, but in many instances it has been observed that the flesh of those obtained from such localities is frequently poisonous.

Among the jointed Annuloida the term Entozoa has been frequently used for the purpose of designating internal parasites. Epizoa, on the other hand, is the term employed for certain small crustaceans, which, in their adult stage, are likewise parasitic upon the exterior of fish; they possess a suckorial mouth and limbs furnished with hooks, suckers, or bristles.

Mollusca, or soft-bodied animals, commonly known as shell-fish, constitute a most important class in the economy of fisheries, not merely in their providing adult fish with food, but also, as some of them breed at the same period of the year, their eggs and microscopic young are useful as aliment to the fish-fry. Some forms are likewise more directly employed by man as food and bait, as Oysters, Mussels, Cockles, and Periwinkles. The consumer needs no reminder as to how scarce the first have become; and along the east coast of Scotland Mussels for use as bait are attaining famine prices, while the belief appears to be almost general that there Mussel fisheries are retrograding. Many other forms of molluscs are much employed by line-fishermen for bait, especially Whelks, Squids, Cuttle-fishes, &c.

Among the marine Echinoderms, *viz.*, Sea-urchins, Star-fishes, and the Sea-cucumbers, *Holothuriidæ*, all assist more or less in providing food for fish, while a species of the last is largely

consumed as food in China, where it is looked upon as a luxury under the name of "trepang."

The true worms, or Annelides, are indispensable to fisheries. They are divisible into the Abranchiata, or gill-less forms, which contain Earthworms and Leeches; and the Branchiata, or gilled kinds, which include Tubeworms and Sandworms, &c. The Annelids comprise many forms largely employed as food for fish, and some, as the Lobworm, are very useful for bait; others, as Leeches, are detrimental to fish.

Insects have been said to be Nature's most favoured creation, having combined in them all that is beautiful and graceful, interesting and alluring, or curious and singular, in every other class of her (Nature's) productions. They are placed by entomologists in three great divisions, in accordance with whether they pass through a metamorphosis or not, and if they do, whether such is complete or incomplete. Many insects form food for fishes in some stage of their existence, while others are very destructive to fish-eggs.

Crustacea are most generally known as Lobsters, Crabs, Shrimps, Prawns, &c., and are variously divided by different zoologists. All Crustacea are water-breathers, some having eyes placed upon footstalks, while in others they are without stalks, being sessile or immovable. All undergo successive moultings or changes of shell, at which times lost parts become renewed. In the earlier stages of the lower crustaceans they emerge from the egg as a small body, having a central eye and two pairs of limbs (so-called zoea stage), while, as they gradually attain the adult stage, new segments and new limbs appear. In their earlier stages Crustacea become a most important article of food for fishes, while their adult forms are likewise esteemed by the more predaceous kinds.

The class Amphibia comprises Newts, Frogs, and Toads, and in some localities Frogs play a not unimportant part in fisheries, as they not only devour the ova, but likewise the fry, while their own spawn in turn becomes food for fish; and a Frog is highly esteemed by many fresh-water fishes. Reptilia (or Reptiles), including Tortoises, Turtles, Terrapins, Snakes, Lizards, Crocodiles, and Alligators, are more destructive to fish than are the true amphibians. The Chelonians are usually divided into the Swimming Turtles, the Mud Turtles or Soft Tortoises, and

the Terrapins, and lastly, the Land Tortoises. Some of the snakes and serpents are frequently found in fresh water, where they are inimical to fish; while in the seas of hot climates are the venomous Water-snakes (*Hydrophidæ*): these have a laterally flattened tail, lead an aquatic life, and live mostly on fish. Crocodiles and Alligators abound in the fresh and brackish waters of hot countries, and are large consumers of fish, but the form best adapted for this pursuit is perhaps the Gavial of India, which often attains to twenty feet in length, and is a resident throughout the Indus, Ganges, Brahmaputra, and Mahanuddi rivers. The Gavial possesses a long and slender snout, with a narrow mouth; they toss captured fish into the air, and as they descend catch them and swallow them head first.

Among birds, as is well known, not only are the swimming ones, as the Gannets, Cormorants, Gulls, and Terns, of our coast largely destructive to sea-fish, but the last two extend their range to inland waters, where, however, the Dabchicks, Coots, Moorhens, Herons, &c., assist in depopulating fisheries.

Among mammals the Whale and Seal fisheries are of great importance commercially. The Cetacea, or Whales, Dolphins, and Porpoises, themselves destroy immense quantities of fish. So also do the semi-aquatic or amphibious Seals; while the Otter in fresh and brackish waters is a large fish-consumer, although in the East it appears mostly to prefer Frogs.

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## THE RING OUZEL IN CAPTIVITY.

BY J. FOLLIOTT DARLING.

ON the 25th of May, 1882, while on a fishing excursion at Lough Talt, among the Ox Mountains (Co. Mayo), I took a nest of the Ring Ouzel, *Turdus torquatus*, having been attracted to the place by seeing the birds flying about near the top of a steep mountain overhanging the lake. After watching them for an hour (the male flying around me, screeching all the time), I succeeded in marking the hen bird to the nest, which was placed in the most precipitous part of the mountain, near the top, and was on a small ledge in a cliff.

The nest was composed of much the same materials as that

of a Blackbird, and contained four young ones nearly fledged; the parent birds continuing to fly round and threatening me as long as I remained in the immediate vicinity of the nest, though they were not as bold as I have seen them on other occasions. I took two of the young home and reared them, feeding them about eight times a day, at first on bread and milk, slugs, and worms (taking care to kill the latter), with an occasional variety in the shape of insects and raw meat.

As soon as they were able to fly a little, I prepared a room for them, putting perches across, and giving them a bed of earth at one end which was regularly supplied with worms; they soon commenced to pick for themselves, being quite unable to resist a small black beetle, or wood-louse, when moving. To the end their principal food was bread and milk (of which they were extremely fond) and worms; I tried them often with meat (both cooked and uncooked), but they refused it, though they ate boiled potatoes, and luxuriated in currants red and black. Ripe gooseberries they would also eat, rejecting the skins, but picking out the interior.

The first time I gave them a bath I was greatly pleased with the behaviour of one of them; he came up and looked at the water, and then hopped round the vessel two or three times, and finally jumped into the middle of it, and washed away as if he had been long used to it. Afterwards they both bathed regularly two or three times a day.

At first they were very bold and confident, and would fly up on my head and shoulders whenever I went into the room, but, having been absent from home for a few days, I found on my return that the greatest change had taken place. They had shed their nestling feathers, had attained to the long quills of "adolescence," and were very wild. Their true nature seemed to have established itself with the change of plumage, and whenever I entered the room they flew about in the extremest terror, dashing against the windows, screaming piteously, and finally, cowering in a corner and fixing their eyes on me, lay still. This continued for some weeks, during which time they would neither eat nor bathe in my presence, and, in fact, behaved as wild birds might be expected to do when first placed in confinement.

About the beginning of July I adopted a new system with them, and used to bring a chair into the room and sit there



reading and smoking for hours. In due time this produced the desired effect, and on the 6th of July I had the gratification of seeing one of them suddenly (as if by inspiration) hop up to me as I sat, and, after looking up into my face, seize the tag of my shoe-lace and pull it with all his might. He then investigated my tobacco-box, and seemed to take great pleasure in plucking out the pernicious weed and strewing it about the floor, and at last, to complete the reconciliation, he took a bath. The other bird was more shy, but from that day forward got gradually familiar once more. They never became bold enough, however, to fly up on my hand, although they would perch on my feet.

Having cut a few quills from the wing of each, I several times let them out into the garden to forage for themselves, but the difficulty of catching them again made them so much wilder that I gave up the practice, and, in fact, they continued in perfect health without it.

In appearance they differed slightly from each other; one, which I took to be the male, was a shade smaller than the other (I have noticed the same thing in other species of Thrush), the plumage was a little darker, and he had less brown on his throat, besides which he seemed inclined to be "cock of the roost." As regards colour they both resembled young Blackbirds, being of a brownish black all over, with the exception of the breast and throat, which was mottled with light brown, and some time before the autumnal moult they each showed a few white feathers scattered over the breast. On my return home, after a fortnight's absence, on the 1st of August, I found, to my chagrin, that one of them had died. This was the one I took to be the female, but it was unfortunately too much decomposed for dissection, so that I was unable to ascertain for certain whether my surmise as to the sex was correct or not.

On the 21st of August the remaining bird escaped through a broken pane of glass, greatly to my regret. Some time before he took his departure he had completed the autumnal moult, but had not got the white "ring" (or, more correctly, "crescent") on his breast, though the entire plumage was considerably darker, and the brown mottling had disappeared from the breast. He was seen about the place for a week or so, and then finally disappeared. I remarked three different descriptions of note:—(1) the commonest was a short, sharp "chuck-chuck-chuck," very

quickly uttered, usually a double note, but sometimes a single "chuck" or the double one repeated, not unlike the note of a Blackbird when flushed, but shorter and deeper in tone; (2) a shrill and loud scream when much alarmed; (3) a low, chirping, complacent note, only uttered when quiet and undisturbed.

When annoyed they had a curious way of snapping their beaks at the object of their displeasure. This was most frequently observed when one was on a perch and the other trying to get up on it was being repulsed. They showed considerable forethought at times; I often saw one kill several large worms by repeated pecking, and leave them on one side till required if not hungry at the time. They always dug with their beaks, throwing the earth with a sharp jerk to one side, and never used their feet for the purpose. They seemed fond of bright objects, and I have seen them peck at bright pieces of tin, as a Magpie or Jackdaw might do. I observed them frequently eating mouthfuls of coal ashes and straws, I presume to aid digestion.

On the 10th of August, for the first time, I heard the cock bird sing; he sat on a perch with one leg tucked up to his body and his wings drooping, and, swaying his head slowly from side to side, uttered a series of low guttural notes, interspersed with bars in a higher key, and occasionally giving a whistle something like that of a Blackbird. It was not unpleasing to the ear, and fully deserved the name of a song. The sounds seemed to be confined to the throat, and I could not see that the beak was opened during the performance. After that date he often sang.

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#### ON THE TREATMENT OF SNAKES IN CAPTIVITY.

BY ARTHUR STRADLING, C.M.Z.S.

(Continued from p. 213.)

It is impossible to give any definite estimate as to the price of the serpents last mentioned, or of those about to be detailed as eligible for non-heated cages. Taking everything into consideration, perhaps ten shillings each, or an equivalent value, would be a fair average cost for the majority of them, when they are to be bought; though ten guineas might not purchase any given specimen at any given time.

A collection embracing living representatives of all the

European snakes would be very interesting, and might well satisfy the ambition of an ophiological amateur who aims at a speciality. They might all be kept here without artificial heat in the summer, and most of them would go through the winter safely in a state of hybernation. Those which will be most readily procured—exclusive of the common Grass and Smooth Snakes, which will be spoken of separately—are the Bordeaux Snake (*Coronella girondica*, Duméril and Bibron), found in the west of France, Italy, and elsewhere; the Æsculapian Snake (*Coluber æsculapii*, Sturm), of France and Central Europe; the Dark Green (*Zamenis atrovirens*, Wagler) and Horseshoe (*Zamenis hippocrepis*, Linn.) snakes of Spain and Portugal—the Horseshoe is said to be of frequent occurrence at Gibraltar; the Lacertine Snake (*Celopeltis lacertina*, Dum. and Bibr.), Dalmatia and Southern Italy; the Four-lined or Leopard Snake (*Coluber quadrilineatus*, Pallas); and *Rhinechis scalaris* (Bonaparte), of Spain, Italy and Greece. Many of the European species are common to North Africa and Asia Minor as well.

There are a great number of very hardy serpents in the United States which give excellent results in captivity here without extra heat, some of them having bred under these circumstances. Those inhabiting the Southern States will, of course, require more heat than northerly species; but as single species have sometimes a very wide range, the temperature must be adapted according to that of the latitude in which the individual was caught, taking into account the possible elevation above the sea if captured in a mountainous district. Books which describe the snakes themselves will indicate the localities they affect. The Green-spotted Garter-Snake (*Tropidonotus ordinatus*, Boie), the Bull Snake (*Pituophis sayi*, Holbrook), the Chicken Snake (*Coluber quadrivittatus*, Holbrook), the Racer (*Coluber guttatus*, Lacepède), the Moccassin Snake (*Tropidonotus fasciatus*, Boie, Holbrook, &c., called by Catesby, in his 'Natural History of Carolina,' the "Brown Viper,"—the term "Moccassin" is applied to many species, venomous and non-venomous, but all reputed "deadly"),—the Black Snake (*Coryphodon constrictor*, Duméril and Bibron), the Spot-head (*Ischnognathus occipitumaculatus*, Storer), common in Nova Scotia, and the Seven-banded Snake (*Tropidonotus leberis*, Holbrook), are all exceedingly hardy reptiles, and resistant of cold. The Arrow-head

(*Conocephalus striatulus*, Dum. and Bibr.), the Chained Snake (*Pituophis catenifer*, Baird and Girard), the Triangle (*Coluber eximius*, Storer), Graham's (*Tropidonotus grahamii*, Baird and Girard) and Catesby's (*Heterodon catesbyi*, Gray) Snakes, the Punctured Snake (*Ablabes punctatus*, Dum. and Bibr.) of Canada, the Hog-nosed Snake (*Heterodon platyrhinos*, Baird and Girard), the Texan Grass-snakes (*Cyclophis vernalis* and *æstivus*, Günther), and the Ribbon Snake of the Rocky Mountains (*Tropidonotus saurita*, Schlegel), are rather more delicate, but not uncommon.

The Cape of Good Hope also sends us a few of this class; a little more exigent of sunny situations, it may be, but still calculated for reception into our canvas-covered frame. Such are the Black Snake (*Boodon infernalis*, Dum. and Bibr.), of that district, the Cape Snake (*Boodon lineatus*, Dum. and Bibr., a Constrictor), the Smooth-bellied Snake (*Homalosoma lutrix*, Dum. and Bibr.), *Coronella cana* (Smith), *Ablabes rufulus* (Dum. and Bibr.), *Lamprophis aurora* (Fitzinger), the Many-spotted Snake (*Coronella multimaculata*, Günther), the Cross-necked (*Psammophis crucifer*, Boie) and Hissing (*Psammophis sibilans*, Seba) Sand-snakes, and the Tigrine Snake (*Psammophylax rhombeatus*, Fitzinger)—not to be confounded with *Tropidonotus tigrinus*, a Japanese snake, one or two examples of which have reached this country alive; it closely resembles our Common Snake, with a small admixture of red in the colouring. The extraordinary *Rachiodon*, a snake whose teeth are in its stomach, is exceptionally tolerant of cold, but is rarely found.

There are many other serpents in different parts of the world which would be equally suitable, but unfortunately the distance which intervenes between their habitat and these shores makes the arrival of living specimens a matter of similar infrequency to that of angels' visits. We have already noticed this difficulty with the snakes of the antipodes. The Tigrine Snake of Japan, mentioned above, would in all probability prove capable even of naturalisation here. One of the commonest snakes in the *compos* of the River Plate—the climate of which would certainly adapt its ophidians for transference to our own—is *Coronella anomala*, a reptile not unlike our Smooth Snake in habit, but larger and much more gaily decorated; yet until quite recently the British Museum contained but one solitary specimen (and that a mutilated one), while not a single individual has yet been



brought home alive. D'Orbigny's Snake (*Heterodon d'orbignyi*) exists there in immense numbers also, a very handsome creature, black above, with a fine network of orange or pink lines, and beautifully mottled with red and black underneath; a singular stunted horn, in the shape of a trihedral pyramid, surmounts its nose. Merrem's Snake (*Liophis merremi*), again, one of the most variable of all serpents, roams through the whole of South America, and is as much at home in Buenos Ayres as it is in Berbice. Any of these might be kept under the same conditions as British snakes.

Some of the species, however, which have been given in this category will not stand hybernation here at once, but should be kept warm during their first winter at any rate, and coaxed to feed as freely as possible. It will be found that some are hardier than others, not in direct proportion to the temperature of their native land—witness the difference in this respect between the Python of West Africa and the Boa Constrictor; and as some tropical birds thrive here without shelter even better than their feathered relatives of a higher latitude, and will even after a time voluntarily seek exercise in the open air during the depth of winter, so these snakes may be gradually acclimatised, though of course in a much less degree than birds. On the other hand, buyers must not fail to note that snakes from the coldest quarters of the globe in which the tribe is represented, which have been kept long or bred in the heat of a menagerie reptile house, become practically tropical animals, and must be treated as such.

London, Paris, Berlin, Amsterdam, Rotterdam, Hamburg, Antwerp, and many other cities contain zoological establishments which comprise collections of reptiles, where opportunities of buying or exchanging frequently arise. In addition to such grand institutions as these, which are generally founded by scientific societies, very many towns, both in England and abroad, boast public pleasure-gardens, where a goodly number of foreign animals are displayed by way of attraction, and some snakes, susceptible of purchase or barter, will generally be found among them. Travelling exhibitions of wild beasts rarely have anything tempting, and moreover their proprietors purchase from the merchants who are always accessible to the amateur himself. These dealers, who can supply anything, from a

guinea-pig to a giraffe, and are at all times open to buy or sell anything in the shape of live-stock which comes in their way, are found in most of the large sea-port cities of England, France, Germany, Belgium, and Holland. Zoological gardens are furnished partly by these dealers, partly by miscellaneous purchases from private individuals coming home from abroad, and partly by donations of animals from their correspondents and from the collections of other societies of a similar nature. In the markets and about the wharves of those places situated on the coasts of distant lands at which vessels call, a few serpents, as well as other curiosities of the country, are often hawked for sale by vagabond loafers, ever on the alert to make hay of the unintelligent foreigner; if one is resident for any time in such a place, or has a friend living there to act as one's agent, these creatures may, of course, be bought at a reasonable price at "off times" when there is no demand; but since the great dealers have their own experienced collectors in all parts of the world and import animals wholesale, it not unfrequently happens in the case of a common snake, as with that of a parrot or monkey, that the casual visitor finds he has paid three times as much for his purchase abroad as he need have done at home, and has had all the risk, trouble, and expenses of conveyance into the bargain. Sailors often pick up these things very cheaply; not possessing the means of paying heavy prices for them, and so obtaining them at their own when the vendor sees there is no chance of making more, for one reason; and for another, because they "swap" certain articles—such as provisions, knives, and guernseys—which cost them but little, but which are of high value to the other parties. It must be confessed that the animals they covet are much more likely to take the form of birds, marmosets, raccoons or tiger-cats than serpents; nevertheless, Jack, with an eye to the main chance, will sometimes invest in such wares, especially if he has learned by experience that they may be disposed of at a good profit when he gets on shore. And I would strongly advise the reader who may live near any depôt for mercantile shipping to make friends with some Custom House searcher, or other dock-official whose duty it is to board ships on their arrival, and get him to give a hint to any member of the crew in whose possession he may find a snake—or bird or beast, according to the would-be purchaser's fancy, for the advice

applies to all who wish to obtain living animals of any sort. The amateur will in this way be able to buy at a very moderate price, and will yet give the poor mariner a larger sum than he would probably obtain elsewhere; and will stimulate both him and his messmates, to whom he relates the issue of his venture, to increased endeavours in the same direction on future voyages.

Under whatever circumstances the negotiation may be conducted, it is most important to examine the interior of every serpent's mouth for canker before buying it. (The symptoms of this and other diseases will be found in a later chapter). Although this malady is not incurable, it is most commonly fatal, and it will be well to reject all specimens which exhibit indications of it, or to take them only on probation, to try the effects of treatment. An inspection of the mouth may be readily gained by grasping the reptile firmly behind the head, by which the quietest snake is generally provoked to distend its jaws in anger; careful note should be taken also of cuts or bruises about the lips, and of broken teeth, all of which prejudice its value. The body should be felt throughout its entire length for tumours, these occurring most often in the region of the neck or anus, and the under surface ought to be exposed, as terrible gashes are sometimes inflicted there by capture with a sharp hook. Injury of any part of the spine, a very serious lesion, may be detected, even when no external scar or wound is perceptible, by watching the whole movement of the snake's body through its curves, when—instead of *flowing* uniformly, like water through a serpentine channel, with as little evidence of the mechanism of the separate joints—a portion of the backbone will be seen to move stiffly in one piece, and some amount of deflection will usually be remarked just in front of or behind it. Fractures of the ribs (a common result of injudicious use of the tongs) are not easily discovered on external examination; and indeed there are many possibilities of disease and disaster of which the most cautious buyer must take his chance. If there be a choice of specimens, equal in other respects, it is better to select one which has recently shed its skin than one on the point of doing so; and when a history of their antecedents can be obtained, by all means take one which has been known to feed in confinement in preference to those presumably hungry after a fast which dates from their wild state.

It may happen that an amateur will occasionally find himself in a dilemma about a strange snake, being unwilling to purchase it if it should be poisonous, and not having sufficient confidence to determine its nature by looking in its mouth. In a doubt of this sort he may be decidedly recommended to buy, supposing the price to be suitable for such a specimen as he desires, and to take it to the nearest zoological establishment or herpetological authority and get it named. Should it be venomous, he will certainly be able to get something good in exchange for it, living venomous serpents being, as a body, more valuable than non-venomous, for obvious reasons. As was pointed out in 'The Zoologist' for April, 1882, there is no method of distinguishing between a poisonous and an innocent snake from their external characteristics, except those which lead to the recognition of the actual species. The absurd distinction of a black or red tongue, upon which I have heard a dealer insist, goes absolutely for nothing.

A few words on the two colubers which are found in this island may not be out of place here, since they will most probably be inmates of every student's vivarium, and will constitute the entire collection of many whose opportunities of procuring foreign specimens are limited.

The Common Ringed or Grass-snake (*Tropidonotus natrix*, *Natrix torquata*, &c.) has been too often described of late years to require any recapitulation of its salient points. It may be bought in the spring and summer for a shilling or eighteen-pence at most shops where gold-fish, white mice, &c., are sold; very large ones—and it attains a length of over four feet sometimes, the female being the larger—will cost two shillings or a half-a-crown. In its wild state it affects low-lying marshy grounds; is often observed swimming in a pond or stream, where it sometimes catches fish; and always drinks and bathes much in captivity. This is the most common snake in Europe, and is far more numerous in many parts of the Continent than it is here, extending over a very wide area, from Norway and Sweden to Sicily, and from Russia to Spain and Portugal. It is healthy and active in confinement; is undeniably handsome; and, though it hisses violently when frightened, never attempts to bite. Its best and favourite food is frogs, though it will also eat slugs, newts, fish, maggots, and earthworms when very



hungry; in the tropics I have known it eat raw meat. When newly caught it is prone to emit a very powerful and unpleasant odour when alarmed, an odour which no doubt constitutes its means of self-defence (why this species should not use its teeth like any other when attacked has never been explained), since animals, as well as man, betray disgust at it; but this propensity soon disappears as the reptile becomes tame, and with proper care Grass-snakes may be kept with as little offence as any. Their eggs are easily hatched in a conservatory, the hot-water cage, or other warm situation.

Very different in many respects is the Smooth Snake (*Coronella laevis*, or *austriaca*, *Natrix dumfriensis*, &c.). Rarely exceedingly two feet in length, and measuring on an average about eighteen inches, it is of much more slender habit and possesses a smaller and more lizard-like head than the last species; and its brown, speckled upper surface might be considered dull were it not for its exquisite metallic iridescence. Some specimens present a deep salmon or even crimson colouration of the ventral plates, such individuals being usually very pale above. Not the least offensive odour emanates from this little creature; it does not hiss much, but is generally very spiteful at first, biting furiously and repeatedly when touched, though the teeth inflict no more than the slightest scratch upon the skin. It very quickly becomes tame, however, showing no nervousness when strangers handle it, as the Grass-snake does; altogether it would be the preferable of the two, both as a pet and object of study, if its choice of food were not so rigidly limited to that most inconvenient article of diet—lizards. Hence the difficulty of keeping it, though it will exist a long time—a year or more—without feeding when there is a dearth of lacertine provisions; English specimens must assuredly be often reduced to the necessity of doing so in a state of freedom. Occasionally they will accept a slowworm, and it is said they have been known to take young mice and grasshoppers, but frogs are invariably refused. Like the Grass-snake, this *Coronella* occurs abundantly on the Continent, but with a curious limitation to certain districts; for instance, it is found in great numbers on the right bank of the Elbe, and less plentifully on the right bank of the Moselle, but is unknown on the left banks of those rivers; frequent in the north of Italy, rare in the centre and south of

that peninsula, common again in Sicily ; and so on. Its habitat extends farther northwards and higher up the sides of mountains than that of the Grass-snake ; it is found a considerable distance above Upsala in Sweden, and in confinement will be observed to exhibit a greater indifference to cold than any other snake. Writing twenty years ago, Dr. Opel remarked that its hybernation was neither so long nor so deep as that of other reptiles, and that it generally lay upon the surface, not seeking to bury itself. The first of which we have any record in this country was caught at the beginning of the present century in Dumfries, and nearly fifty years elapsed before the second capture, at Bournemouth, was chronicled ; then a few others were discovered at long intervals, gradually diminishing in duration, however ; and now, curiously enough, the Smooth Snake is *apparently* becoming more and more abundant every year, though in reality it is, of course, decreasing in numbers as man invades its domain, like everything else—the explanation being that its true nature is now more widely recognised, and that it is not so apt to be confounded with the Viper as it has been hitherto.

Any dealer on the Continent will supply Smooth Snakes ; here, I believe, they are only to be bought at Bournemouth—most English specimens are captured in the New Forest. Lizards for them may be procured at naturalists' shops. They are viviparous ; rarely drink or bathe ; and their choice of a dry location, like the Adder, to which they bear a superficial resemblance, leads to a little danger of confusion between the two sometimes, when a snake is found in such a situation. No one who has ever seen a Grass-snake in his life could possibly mistake it for the Viper, nor is there much likelihood of those who have studied the description of the Smooth Snake given in books, especially the arrangement of the plates on the head, falling into any such error, though they might find it easier to say which was which, in comparing the two together, than to name them without hesitation apart. To the ophiologist there is no likeness between them ; but three rough distinctions may be pointed out to those who have not made themselves acquainted with the generic characteristics which mark the classification. The Smooth Snake's head is long, narrow, and pointed—that of the Viper broad ; the scales on it are large and shield-like, while the Viper's are small ; and the black spots which run in a

double row down the back are oval and *separate* in the *Coronella*, but rhomboid and *confluent* in the *Viper*. Don't search for a V; every snake will show Vs and Xs and Zs too in its markings about the head.

(To be continued.)

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## NOTES AND QUERIES.

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**The Davis Lectures at the Zoological Gardens.**—A series of lectures upon zoological subjects will be given in the Lecture Room in the Society's Gardens, in the Regent's Park on Thursdays, at 5 p.m., commencing on June 7th, "The Evolutions of Ungulate Mammals," Prof. Flower; 14th, "Our Snakes and Lizards," Prof. Mivart; 21st, "The Lamprey and its kindred," Prof. Parker; 28th, "Birds and Lighthouses," Mr. J. E. Harting; July 5th, "African Birds," Mr. R. Bowdler Sharpe; 12th, "South-American Animals," Dr. P. L. Selater; 19th, "Siberian Birds," Mr. Henry Seebohm. These lectures will be free to Fellows of the Society and their friends, and other visitors to the Gardens.

**The Birds of Walney Island.**—Whilst thanking you for having noticed in 'The Zoologist' so humble a publication as my 'List of the Birds of Walney Island and the Neighbourhood,' permit me to make two or three remarks in reply to the criticism on my pamphlet which appeared in your last number. I acknowledge that a more correct title would have been "The Birds of Furness;" but I venture to doubt whether this would have conveyed to the majority of ornithologists as much information as the one I have selected; and I cannot help thinking, from your remarks on this head, that you have overlooked the fact that the word "neighbourhood" appears on my title-page. As regards the appearance of the Spotted Eagle, I fail to see the inconsistency of recording the fact of one having been found dead on Walney Island, whilst refusing to admit it to the ranks of British-killed specimens. I do not feel capable of deciding whether the bird in question was a wild specimen, or whether it was one that had died on board ship, and been consigned to the deep, or whether it had escaped from captivity. All I can positively assert is that it is a genuine specimen of *Aquila navia*, that it had not been very long dead when discovered, and that until recently it could at any time be seen at Barrow. I have given authorities for the occurrences of the rarer species of birds which have not come under my personal observation, that for the Swallow-tailed Kite being the 'Handbook of British Birds' (p. 88); and if I have erred at all I feel sure that it is rather in having omitted species which have a claim to be inserted

in my list than in the insertion of doubtful pretenders to that honour. Let me, in conclusion, express an earnest hope that the publication of my pamphlet, with your remarks thereon, may result in a greater interest being displayed in the Ornithology of a district which has hitherto escaped much notice.—W. A. DURNFORD (Tankersley Rectory, Barnsley).

## MAMMALIA.

**Marten in Co. Clare.**—I received from Co. Clare some time ago a fine specimen of a Marten, whether *Martes abietum* or *M. foina* I am not quite certain, but incline to consider it the former. The following are the dimensions, which seem to me above the average:—Entire length, from tip of nose to end of tail, 29 in.; length of head,  $4\frac{3}{8}$  in.; tail, 12 in.; ditto, to end of caudal vertebræ,  $8\frac{1}{2}$  in.; fore limb from head of humerus to end of claws,  $6\frac{1}{2}$  in.; hind limb, similarly measured,  $8\frac{7}{8}$  in. Weight, 2 lbs. 5 oz.—J. FOLLIOTT DARLING (Bayview, Clonakilty, Co. Cork).

## BIRDS.

**Choughs in the Co. Waterford.**—Although these birds have decreased very considerably since the time when a man who was commissioned by Dr. Ball to shoot him one brought him in *fourteen*, and though, even within my recollection, they were decidedly more numerous, yet they may still be found throughout the year at many points on the more precipitous portions of the coast of Waterford. They do not always shun human habitations, for I have repeatedly within the past month seen a pair feeding in the field beside the house of a friend who lives over the cliffs in which they breed. They were even observed there lately perched on the stable-roof. Their nest (in which there were no eggs on the 9th inst.) is placed in a fissure, or recess, at the top of a cave some thirty feet high. The sea forms the floor of this cave, except at low water. Over the nest is an overhanging arch of conglomerate. On April 23rd I obtained a Chough's nest with five eggs, the yolks of which were perfectly fresh, and of as deep a colour as the bird's bill. The nest was in a fissure over a cave, with rocks overhanging it again, and could only be approached with a long ladder. This nest is composed of fine stems and small pliant bents, chiefly of heather, of a much finer description than those used by any of the *Corvidæ*, except the Jay, though among the foundation sticks are coarser pieces of blackthorn. Internally it is composed of cow's hair, with a lining of sheep's wool. There is a very peculiar feature: attached to the bottom of the nest by a long twist of the same material is a regular little mop of wool, which lay among or upon the eggs, and must certainly have helped to conceal them and to keep them warm when the parent was absent. I have never heard of the weaving powers of a bird being employed in a similar device. On May 4th, while I was on the top of a lofty cliff, my friend in the boat



called out that he had marked a Chough to her nest below. I descended a sheer cliff on my rope, some eighty feet or upwards, when I reached another cliff at right angles to the first. Between the two was a narrow fissure, closed above by blocks and earth, and having a smaller block lodged in its mouth, leaving a very small opening. Through this I could just descry the nest high up at the back of the fissure. I had then to dislodge the block in the jaws of the fissure, and while I was thus engaged the Chough flew almost in my face, with her shrill scream, diving out beneath me. I then had to lodge myself sideways in the narrow fissure, depending on the sides alone, like a sweep in a chimney. At last I wriggled within arm's length of the nest, which contained but two eggs, one hard set and the other becoming addled. It was composed of materials similar to the nest above described, but had not the mop arrangement. Another nest, to which my gamekeeper descended on May 9th, contained also but two eggs, partially incubated, and was also in a crevice, into which he had to creep up, the rope being slackened, after his having descended a considerable cliff. Among the lining of row's-hair was a rag of black worsted binding. These pairs of Choughs having stopped laying after producing but two eggs surprise me. I hope this does not indicate approaching sterility. The eggs of this species were formerly obtained with much greater ease. Two fishermen brought me twenty-two of them from the same locality in the year 1856, among which is an egg still in my possession, the ground colour of which is pure white, and its only markings are pale ash-coloured specks. It is, however, an undoubted Chough's egg. Choughs used, as stated to me by an old resident on the coast, to breed, as long as he could remember, in much lower caves than they now select; and some of the spots pointed out to me as having contained their nests could be reached without ladder or rope. As they have become scarcer they have also become wary, and, happily for them, climbers are not to be found now among the peasantry here. It is hard therefore to account for the diminution in this species. May it be long ere the shrill cry of the Chough ceases to be heard among the Waterford cliffs, while the eye follows its graceful, buoyant flight. Now, closing its wings, the bird seems dropping into the sea, when, suddenly spreading them again, it rises with its peculiar scream, its companion dropping as it rises, and *vice versa*. Thus a pair of Choughs may be distinguished at a great distance by their peculiar flight. Their food seems to be chiefly small insects, which their fine-pointed bills are suited to take up. They delight in an ant-hill, and I have found a caterpillar in the stomach of a Chough. In Irish the Chough is called "Cawg." They are otherwise called here "Redshanks" or "Redbills."—RICHARD J. USSHER (Cappagh).

**The Ortolan Bunting in Lincolnshire.**—On the afternoon of May 3rd, when walking across a newly-sown field of oats near the Humber, I noticed

a small finch-like bird occupied in picking the scattered grains from the surface, which were rapidly husked and then swallowed. It readily allowed me to approach within ten yards, and sometimes nearer. On examining it through the binocular I saw at a glance it was an adult female Ortolan. I watched her for nearly half an hour, sometimes putting her up, after which she never went far, not beyond thirty or forty yards, commencing to feed greedily on alighting. It was astonishing the number of oats the little creature managed to stow away within a short time. The head and nape were light grey, and contrasted strangely with the rest of the upper plumage. There was a patch of brown on the forehead, and streaky patches of the same colour from the bill running below and beyond the eye; a dusky brown spot also on each side of the breast, like the commencement of a collar. In flight the outer tail-feathers showed a considerable proportion of white. The Ortolan Bunting is a well-known migrant across Heligoland in the latter part of April or early in May, and again in August and September. Its ordinary line of migration is far to eastward of these islands, and on the opposite side of the North Sea. I can only conjecture that the very strong north-east winds of the last few days have blown it far to westward of its course and on to our east coast. The first week in May is just the time when this might happen. I visited the same field the next morning, hoping to find the little stranger still there; the quest was, however, not successful, although I was rewarded by watching five Dotterel in the adjoining marsh. A very pretty group they formed, their exquisite plumage relieved against the lush dark green of the pasture.—JOHN CORDEAUX (Great Cotes, Ulceby).

**Melanism in the Bullfinch.**—A short time since I saw at the house of an Edinburgh bird-fancier a Bullfinch (*Pyrrhula vulgaris*) in singularly abnormal plumage. It was wholly black, tinged with a silvery grey, except the crown of the head, which was snowy white. No data were forthcoming as to when this change of plumage had been assumed, but as it was moulted in the house, it probably became black in its last moult. I have seen other Bullfinches which had assumed a black and white garb; but never before saw a complete white crown, though I have twice known wild hen Bullfinches caught in Oxfordshire which had a sprinkling of white on their black caps. With regard to melanism in the Bullfinch, I have never seen a black Bullfinch that had not become so wholly in confinement. It is sometimes due to a hemp diet, by which I produced it in a fine male myself; but melanism occurs in both Goldfinches and Bullfinches, and also in Sky Larks, which have never been kept on hemp-seed. In the Sky Lark, melanism seems to be wholly the result of artificial conditions; the wings of black Larks are often partially white. In the Goldfinch, melanism chiefly occurs in old birds, in a state of freedom; but patches of black feathers sometimes mottle the breast of wild finches, even of yearling

birds; and some birds become almost entirely black in moult indoors. In the House Sparrow, (Sabine's) Snipe, and Redwing (as recorded by Mr. J. Whitaker), the only other British melanisms that occur to me, this abnormal plumage only occurs in wild birds: and the same is probably true of gular melanism, as illustrated by the Bramblings figured in Rowley's 'Ornithological Miscellany.'—HUGH A. MACPHERSON.

**The Scientific Name of the European Thick-knee.**—For years ornithologists have been content to designate this species by Temminck's name, *Ædicnemus crepitans*, bestowed by him in his 'Manuel d'Ornithologie,' ii., p. 521 (1815—1820). But that love of change which many scientific writers of the present day appear to be unable to resist, coupled, it must be said, with a desire to apply conscientiously the Stricklandian code of rules for zoological nomenclature, has resulted in this time-honoured name being discarded, and a fresh one substituted. Mr. Dresser, in his excellent and authoritative work on the 'Birds of Europe,' writes this species down as *Ædicnemus scolopax*, S. G. Gmelin, and doubtless, on the strength of his opinion, many writers will now follow his lead. It seems to me, however, that this name is wholly inadmissible, since it directly contravenes the rule which provides that "specific names when adopted as generic must be changed." S. G. Gmelin's specific name *Scolopax* has been adopted as generic, being now *omnium consensu* restricted to the Woodcocks; therefore it must be changed. It might have been well to let *crepitans*, Temm., stand; but if an older name can be found to which a recognisable description is attached, the rigorous law of priority demands its adoption. Such a name is that of Piller and Mitterpacher, who in 1782 described our Thick-knee (*Iter per Poseganam Sclavonia provinciam*, p. 26, tab. iii.) as *Charadrius illyricus*. Although in the Latin description which these authors have given of their bird some few errors are apparent, the figure (tab. iii.) shows that the species referred to is the European Thick-knee. If Temminck's name, therefore, is to be discarded, *Ædicnemus illyricus* (Piller and Mitterpacher), for the reasons given, should be adopted in preference to that proposed by Mr. Dresser.—J. E. HARTING.

**The Marsh Tit in Oxford.**—Strolling along St. Giles, Oxford, one morning in Nov., 1882, about 8 a.m., I came across a Marsh Tit busily hunting for insects on the panes of the lamp-posts; flitting from side to side, he clung to the iron framework whilst the crannies were carefully explored. I had never seen any Titmice foraging on lamp-posts before, and therefore venture to record it. The Marsh Tit loves to feed on the small beetles that haunt roses; at times I have seen it pitch on the high road in order to search for insects in horse-droppings. It is even more partial to the seeds of sunflower than *Parus major*. In autumn it feeds largely on thistle-seeds, and this is especially the case, I think, in Epping Forest.—H. A. MACPHERSON.

**Hybrids amongst Birds.**—I confess I am not a great believer in Blackbird-and-Thrush hybrids. Professor Newton (whose 'Yarrell' I have not at hand) mentions one such instance which is authentic, I think, but I believe that in many cases partial melanisms of the Thrush have been thought to be hybrids. I have an instance of a Thrush which turned nearly black in confinement, its owner thinking that in his absence it had been changed; but with proper food it reverted to its normal colour. Other incipient melanisms of the same kind are frequently due to hemp-seed. In the British Museum is a supposed Blackbird-and-Thrush hybrid, with the light parts well defined. Mr. Christy has very likely seen it: it is in the British bird-room, and was, I think, presented by Mr. A. D. Bartlett, having probably been obtained in the neighbourhood of London. I have seen a Blackbird, killed at Reigate, with large patches of brown upon it, very singularly marked, yet the brown not the mottled brown of a Thrush. A cock Blackbird will occasionally retain large patches of the brown plumage of immaturity to the spring following its birth, when it would be about a year old, as some young Rooks retain their nasal bristles a twelve-month or more. A Blackbird in this state might at first sight be supposed to be a hybrid. If your correspondent were to refer to the catalogues of the Crystal Palace bird shows, I think he would find one or two supposed hybrids. In seeking for instances of hybridism we must remember that hybrids may sometimes take after one or other of their parents, as in the Grey and Carrion Crow. Hybrids between the Greenfinch and Linnet have repeatedly occurred, differing very much in plumage; yet probably for every one which has been recognised, several, from their resemblance to one or other of their parents, have escaped notice. Many continental collections, in countries where the *chasse aux grives* is largely carried on, as at Berlin, Turin, and Marseilles, have the most curious varieties of the Thrush tribe, including possibly some hybrids. The subject is interesting, owing to the dissimilarity of the two birds, though indeed they are not more dissimilar than the Greenfinch and Linnet, or than the Pochard and Nyroca, which have several times been known to cross in a wild state; and other examples might be cited among the game-birds. Probably among closely-allied species there are far more hybrids than we are aware of. My father has a live Goose which pretty conclusively shows that the Bean Goose will, in a wild state, occasionally cross with the White-fronted Goose, and, if this is the case, how much more likely that it should cross with the still more nearly-allied Pinkfooted. Many Redpolls occur in Norfolk and elsewhere, which are intermediate between the common Redpoll and the Mealy; and it is practically impossible to say which they are. The like has been observed among the Siberian Goldfinches, but the difficulty melts away if we allow that these intermediate birds are hybrids.—J. H. GURNEY, Jun. (47, Eversfield Place, St. Leonards).



**Swift returning to former Nesting-place.**—Between 7 and 8 p.m. on the 27th April a Swift made its appearance here at Looe, and, from its actions, I think there can be no doubt it must have been here in former years. There was a hole in the wall of our old church which has for a long series of years been used as a nesting-place for Swifts. Since the autumnal migration of last year the old church has been pulled down, and the walls of the new church and framework of the roof have been rebuilt. My attention was first called to the Swift by the many attempts it made to find the old hole, having all the action of being about to dart into the hole as I have seen the Swifts do for years past; this action was continued, I think, during my observation of half an hour, as many as fifty times, a very cold east wind blowing at the time. I think this clearly shows great instinct to cause the bird to return to its old quarters, but little reason in not finding out more readily the hole had been removed. When I left off observing, the bird was still pursuing the same course. I did not see another Swift until the 4th May, again a single bird. On May 8th there were four Swifts here.—STEPHEN CLOGG (Looe).

**Iceland Gull at Aldeburgh.**—Writing under date of Dec. 14th, 1882, Mr. Whistler, of Aldeburgh, offered me, in the flesh, a fresh-killed example of the Iceland Gull, killed in the neighbourhood, "in magnificent plumage." Mr. Whistler adds in his note, which at the time I mislaid, that so fine an example had not been obtained locally since 1860. If I recollect right the last Aldeburgh specimen was obtained in 1876, at least so far as records go.—H. A. MACPHERSON (Carlisle).

**Cormorants resorting to Fresh-water Lake in Summer.**—The abundance of barren individuals of these birds formerly misled me much. Twenty years ago, and probably to the present day, a number of Cormorants inhabited a fresh-water lake at Castlecoote, near Enniskillen, during the summer. The lake is about forty miles from the sea. The birds roosted on a low plantation of alders (?) on an islet, and it was a bitter disappointment to me, as a birdsnesting schoolboy, to find they did not breed. I was an early enough visitor, too, since I have taken Heron's eggs on the lake in February, and watched the nests of the naturalised Greylag Geese on these waters frequently. Year after year the Cormorants were there, whether barren or immature I am unable to decide, but I never obtained their eggs. I remember also to have examined a rookery on the shores of the lake, in the hope of finding Cormorants there, for, as Thompson has remarked (vol. iii., p. 244), they sometimes build on trees.—H. CHICHESTER HART (Dublin).

**Pale Variety of the Jay.**—A Jay, lately killed, has come into my possession in which all the parts usually brown are nearly white, and much of the usual black is also replaced by white, as is also a part of the blue

patch on the wings. The bill is also white. The eyes were of the usual colour. But the most interesting feature is that where the feathers are usually black in the tail, in this specimen a blue pattern is to be seen, similar to that on the wings. I have seen and handled many Jays, but I never remember seeing one in which there was any remarkable variation of plumage, the *Corvidæ*, as a rule, being less liable to variation, in my experience than many other families of birds.—HENRY LAVER (Colchester).

**A White Magpie.**—On March 2nd I had the pleasure of examining a white Magpie in the possession of Mr. Skinner, of River Street, N. Its owner courteously showed me the bird, and informed me that it was taken from the nest near Sittingbourne, Kent, in 1882. It was not as white as the albino Jay in the Western Aviary of the Zoological Society, but was almost entirely white, the forehead and both primaries and secondaries, however, being tinged with black. The beak and irides were normal: the legs flesh-coloured.—H. A. MACPHERSON (Carlisle).

**Ivory Gull on the Lincolnshire Coast.**—On March 29th, 30th, and 31st I saw an Ivory Gull (*P. cornuta*) between Great Grimsby and Cleethorpes. It was easily distinguished from other large Gulls when on the wing by its slow and steady flight (resembling that of a Heron rather than a Gull), and the white colour of the plumage, which was then very conspicuous. When picking up food on the shore its action was peculiar: it held its body in a horizontal position and dropped its head and neck, so that when the beak touched the ground the head and neck formed a right angle with the body.—T. FISHER (Erfurt Lodge, Greenwich).

**Shore-birds on the Humber Flats in May.**—During the afternoon of May 16th, I saw a flock of a dozen Grey Plover on the muds, all apparently in breeding plumage: seven Whimbrel in one flock, and several others calling. I also watched, with my telescope, two Oyster-catchers feeding within fifty yards of the embankment. I mention this especially, as it is rarely I have had an opportunity of seeing these pretty birds at so short a distance. They were very busily employed searching the shallow gutters which everywhere intersect the ooze, boring like Godwits with their bright orange beaks, and appeared to be feeling for sandworms. When successful in touching their prey they displayed the greatest eagerness to secure it, plunging their beaks up to the forehead in mud and water, and wriggling their head and neck. They rose at last with a shrill "peep-peep," flying directly from me to the tide-edge, the pure unsullied white of the lower back, tail-coverts and tail, and expanded wings, having exactly the appearance of an open fan, the broad end backwards, of pure white colour, edged with black. Common as the Oystercatcher is at some seasons on the sandy flats of our coast, and at Spurn, it is very rarely indeed that I have seen them so far within the Humber.—JOHN CORDEAUX (Great Cotes, Ulceby).

**Black-game killed on the Railway.**—A bird-stuffing engine-driver in our parish showed me a brace of Black Grouse picked up on the line near Thornhill, Dumfries, after having been knocked down by an engine. The black cock turned the scale at 3 lbs. 5 oz. Is not this method of destruction unusual? The grey hen was crushed considerably, the spine being broken.—H. A. MACPHERSON (Carlisle).

**Grey Skrike and Waxwings in Aberdeenshire.**—A specimen of the Great Grey Shrike was shot at Banchory, near Aberdeen, on February 8th, and a pair of Waxwings also were obtained near Aberdeen. Another Waxwing was shot near Edinburgh some time in January last.—J. WHITAKER (Rainworth Lodge, Mansfield).

**Swallows returning to their old Nests.**—In Gould's 'Birds of Great Britain' there is an account of a House Martin returning to its old nests, to which my name is attached, which I communicated to Mr. Gould some thirty years ago when a lad at school. I was asked the other day if this was authentic, and think it right to let it be known that I believe it is *not*, but only a trick played by one of the boys.—PHILIP CROWLEY (Croydon).

[If our correspondent has good reason to believe that he was deceived, it is of course desirable to correct the statement made by him in good faith. At the same time we may remark that there is nothing at all improbable in the story. It has been proved many times, by catching the birds and marking them, that Swallows and Swifts return year after year to their old nests, and details of a satisfactory experiment of this kind with a pair of Chimney Swallows at Stroud will be found reported in 'The Field' of June 4th, 1881.—ED.]

**Mealy Redpoll with curved Mandibles.**—I have recently received a Mealy Redpoll, apparently an old female, netted at Skipton, Yorkshire, in which both mandibles curve over one another in Crossbill fashion. I do not recollect anything similar recorded of this species, and therefore venture to mention it.—H. A. MACPHERSON (Carlisle).

#### REPTILES.

**Snakes eating Fish.**—One of my Snakes, *Coluber natrix*, is sufficiently tame to feed from my hand. About a fortnight ago he captured a Stickleback in a large aquarium, and experienced little difficulty in devouring it, though the spines were erect. The fish was devoured head foremost. Yesterday the Snake, which in girth is not greater than a large Stickleback, enjoyed a similar repast. Another Snake of the same species several times tried to swallow another of these prickly little fish, but could not do so as it had seized the fish by the tail. The Snakes caught the fish without any assistance from me.—C. A. WITCHELL (Stroud).

## ARCHÆOLOGY.

**Protecting Poultry from Foxes in Scotland.**—In my copy of Childrey's 'Britannia Baconica' (1660), a manuscript note runs as follows:—"Singularities of Scotland. In all the hill country, and where there is much poultry, specially in open moores, every house doth nourish a young fox, and then, killing the same, they mixe ye flesh thereof amongst ye meate they give ye fowle and other small bestiall, by meanes whereof they are preserved from ye attempt of ye fox for 2 [? 12] moneths after, who smelling that meate in their craw will not touch ye bird or beast." At the foot of the opposite page are the initials and date "3 Julij A. 1667, W. M." in the same handwriting. There are a considerable number of other MS. notes, evidently taken from various books, but no reference is given for the above.—OLIVER V. APLIN (Great Bointon, near Banbury).

**Origin of the name "Twite."**—In Yorkshire the Twite is called "Twate-finch." "Thwaite" is an old English word meaning a piece of ground cleared of timber—ground, we may presume, that would be favourable to the bird. Can any one say whether the present name of the bird has been derived from this word "thwaite," or from one of its notes?—GEORGE ROBERTS (Lofthouse, Wakefield).

[Mr. H. T. Wharton, in his remarks on the meaning of English bird-names ('Zoologist,' 1882, p. 442), considers that the name "Twite" is one of those "which plainly indicate the note they describe," and we see an obvious correlation with the words "twit" and "twitter."—ED.]

**Spoonbill and Shoveller.**—It is somewhat curious to remark that as in the sixteenth and seventeenth centuries the Spoonbill, *Platalea leucorodia*, was known as "Shovellard" (*vide* 25 Henry VIII., cap. 11, and 'Zoologist,' 1877, p. 428), so now-a-days, in the Otmoor district in this county, the Shoveller, *Anas clypeata*, is known as the "Spoonbill."—OLIVER V. APLIN (Great Bointon, near Banbury).

## OBITUARY.

**The late Mr. W. A. Forbes.**—Mr. William Alexander Forbes, Fellow of St. John's College, Cambridge, Prosector to the Zoological Society of London, and Lecturer on Comparative Anatomy to Charing Cross Hospital, whose untimely death on the Niger has been lately announced, was born at Cheltenham on June 24th, 1855, and was the second son of Mr. J. S. Forbes, the well-known railway director. He was educated at Kensington School and Winchester College. On leaving Winchester in 1872 he passed a year at Aix-la-Chapelle, studying German, and then became a student of the University of Edinburgh, where he pursued the regular medical course, paying special attention to Zoology and Botany, and commencing collections



of insects and plants. In 1875 Forbes transferred his residence to London, and entered himself as a student of London University with the idea of taking a medical degree in the metropolis. By the advice of the late Prof. Garrod and other friends Mr. Forbes was induced in October, 1876, to leave London and to become an undergraduate of St. John's College, Cambridge, where he was subsequently elected Scholar, and took his B.A. degree with a First Class in the Natural Sciences Tripos in 1879. The post of Prosecutor to the Zoological Society of London having become vacant in October, 1879, by the lamented death of Prof. Garrod, Mr. Forbes was appointed to that office in the January following. Mr. Forbes entered upon the duties of his office with characteristic energy, and during the three following sessions of the Zoological Society brought before the scientific meetings a series of valuable communications derived from his studies of the animals that came under his examination. He especially directed himself to the muscular structure and voice organs of birds, in continuation of the researches of his predecessor Garrod on the same subjects. In the summer of 1880 Mr. Forbes made a short excursion to the forests of Pernambuco, Brazil, of which he published an account in 'The Ibis' for 1881. In July, 1882, he left England on what promised to be a splendid opportunity of visiting the eastern tropics with every advantage and without much risk. Detained at Shonga—a station 400 miles up the Niger below Rebba—by the breaking down of his communications, Mr. Forbes fell a victim to dysentery on January 14th last, thus adding another name to the long list of martyrs of science in that deservedly dreaded climate. Mr. Forbes's published works consist chiefly of papers in the 'Proceedings of the Zoological Society' and 'The Ibis,' altogether about sixty in number. He was editor of the memorial volume of collected scientific papers of his predecessor Garrod, and just before he left England in July last had finished the last sheets of an excellent memoir on the anatomy of the Petrels—since published in the 'Zoology of the Challenger Expedition.'—'Nature.'

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## SCIENTIFIC SOCIETIES.

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### LINNEAN SOCIETY OF LONDON.

*April 19, 1883.*—Sir JOHN LUBBOCK, Bart., M.P., F.R.S., President, in the chair.

Messrs. T. W. Coffin, F. H. Collins, C. F. De Laune, D. Morris, J. Jardine Murray, and Hon. J. B. Thurston were elected Fellows of the Society.

A paper was read by Sir John Lubbock "On the Sense of Colour among some of the Lower Animals." He stated that some years ago M. Paul

Bert made a series of interesting experiments with the common *Daphnia*, or Water Flea, which is abundant in ditches and pools. He exposed them to light of different colours, and thought himself justified in concluding from his observations that their limits of vision, at both ends of the spectrum, are the same as our own, being limited by the red at one end and the violet at the other. In a previous communication Sir John Lubbock showed, on the contrary, that they are not insensible to the ultra-violet rays, and that at that end of the spectrum their eyes were affected by light which we were unable to perceive. These experiments have recently been repeated by M. Merezkowski, who, however, maintains that though *Daphnia* prefers the yellow rays, which are the brightest of the spectrum, it is, in fact, attracted, not by the colour, but by the brightness; that, while conscious of the intensity of the light, it has no power to distinguish colours. Given an animal which prefers the brightest rays, it may seem difficult to distinguish between a mere preference for light itself and a preference for any particular colour. To test this, however, Sir John Lubbock took porcelain troughs about an inch deep, eight inches long, and three inches broad. In these he put fifty specimens of *Daphnia*, and then, in a darkened chamber, threw upon them an electric spectrum, arranged so that on each side of a given line the light was equal, and he found that an immense majority preferred the green to the red end of the spectrum. Again, to select one out of many experiments, he took four troughs and covered one-half of the first with a yellow solution, half of the second with a green solution, half of the third with an opaque plate, and he threw over half of the fourth a certain amount of extra light by means of a mirror. He then found that in the first trough a large majority preferred being under the yellow liquid rather than in the exposed half; that in the second a large majority preferred being under the green liquid rather than in the exposed half; that in the third a large majority preferred the exposed half to that which was shaded; and in the fourth that a large majority preferred the half on which the extra amount of light was thrown. It was evident that in the first and second troughs they did not go under the solution for the sake of the shade, because others placed beside them, under similar conditions, preferred a somewhat brighter light. It seems clear, therefore, that they were able to distinguish the yellow and green light, and that they preferred it to white light. No such result was given with blue or red solutions. In such cases they always preferred the uncovered half of the trough. It is, of course, impossible absolutely to prove that they perceive colours, but these experiments certainly show that rays of various wave-lengths produce distinct impressions on their eyes; that they prefer rays of light of such wave-lengths as produce upon our eyes the impression of green and yellow. It is, of course, possible that rays of different wave-lengths produce different

impressions upon their eyes, but yet that such impressions differ in a manner of which we have no conception. This, however, seems improbable, and on the whole, therefore, it certainly does appear that *Daphnia* can distinguish not only different degrees of brightness, but also differences of colour.

The Rev. A. E. Eaton gave a digest of an extensive monograph of the *Ephemeridæ*, or Mayflies (part 1). In this the subject is prefaced by an historical account and general review of the group, with a tabular conspectus of the genera at present known, and descriptions of the genera and species of the first group (*Palængenia* to *Pentagenia*).—J. MURIE.

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ZOOLOGICAL SOCIETY OF LONDON.

May 1, 1883.—Prof. W. H. FLOWER, LL.D., F.R.S., President, in the chair.

The Secretary read an extract from a letter addressed to him by Mr. W. L. Crowther respecting the possibility of obtaining living specimens of the Thylacine of Tasmania.

The Secretary exhibited, on behalf of Mr. H. Whitely, the skin of a Bird of Paradise (*Diphyllodes gularis*) from the island of Waigiu, which was believed to be the second example of this rare species yet obtained.

The Secretary exhibited a set of Radde's International Colour-Scales, and explained the way in which it was intended to be used.

A communication was read from Mr. F. Moore, containing the second part of a monograph of the sections *Limnaina* and *Euplœina*, two groups of Diurnal Lepidoptera belonging to the subfamily *Euplœinae*. The present paper contained the descriptions of many new genera and species belonging to the group *Euplœina*.

Mr. Alfred Tylor read a paper on the coloration of animals, showing that the character of the ornament or decoration differs in the two great divisions of the animal kingdom—the Invertebrata and Vertebrata. Mr. Tylor pointed out that the law of emphasis, well known in Architecture, was, in his opinion, applicable to Natural History, and showed that the prominent characters of the animal are picked out in colour in precisely the same way whenever colour is present. He divided the subject into several sections, and exhibited illustrations of the more important families in coloured diagrams.

A communication was read from Dr. O. Boettger, of Frankfort-on-the-Main, containing the description of new species of land-shells of the genus *Clausilia*, from the Levant, collected by Vice-Admiral Spratt.

Mr. W. F. Kirby gave an account of a small collection of Hymenopterous and Dipterous insects obtained in the Timor-Laut group of islands by Mr. H. O. Forbes.—P. L. SCLATER, *Secretary*.

## ENTOMOLOGICAL SOCIETY OF LONDON.

March 7, 1883.—J. W. DUNNING, Esq., M.A., F.L.S., &c., President in the chair.

Messrs. Francis F. Freeman (8, Leigham Terrace, Plymouth), Frederick Charles Lemann (Blackfriars House, Plymouth), and Frederick W. Smith (Hollywood House, Blackheath Point, Blackheath, Kent), were balloted for and elected Members of the Society.

Mr. R. M'Lachlan exhibited a specimen of *Polistes hebraeus*, Fabr., which was captured in one of the London Docks on Saturday last: the specimen was in a dormant state, but revived from the heat of the meeting-room. These wasps had been commonly seen on a ship returning from Calcutta, which contained a quantity of bamboos as dunnage; Mr. M'Lachlan thought these probably contained nests of the *Polistes*.

Mr. T. R. Billups exhibited specimens of *Phacogenes homochlorus*, Wesm., and *Hemiteles incisus*, Brdg., captured at Chobham last summer.

Mr. Billups also exhibited a further specimen of the Orthopteron exhibited at last meeting, and which he had identified as *Copiophora cornuta*, DeG., a Central American species.

Dr. D. Sharp exhibited a preparation showing the pro- and meso-thoracic membrane of a large *Elater* (*Chalcolepidius porcatus*, Linn.), in which the prothoracic breathing orifices were of a hitherto unobserved structure. The two stigmata were closed by hinged, horny trap-doors, very similar in action to the lid of a trap-door spider's nest.

The Secretary exhibited, on behalf of Mr. G. S. Saunders, a microscopic instrument which greatly facilitated the examination of pinned or living specimens under the microscope without alteration of the stage.

Mr. J. B. Bridgman communicated a paper entitled "Further Additions to Mr. Marshall's Catalogue of British Ichneumonidae," in which sixteen species were referred to as new to Britain, and twenty-six species described as new to science.

April 4, 1883.—J. W. DUNNING, Esq., M.A., F.L.S., &c., President, in the chair.

The President announced the sudden death, on March 27th last, of Prof. P. C. Zeller, of Stettin, who had been an Honorary Member of this Society for upwards of thirty years.

Messrs. Lewis F. Hill (3, Edwardes Terrace, Kensington), and Louis Péringuey (Rondebosch, Cape Town), were balloted for and elected Members of the Society.

Mr. W. F. Kirby exhibited specimens of *Acridium succinctum*, Linn., received from Mr. T. Davidson, who stated that it was this species of locust which had lately been causing great destruction in the Deccan and other parts of India.



Prof. Westwood called attention to a communication in a Sussex newspaper by a gardener named Page, stating that he had found a new cause of the potato disease. On examination by Prof. Westwood, this supposed cause was found to consist in the attacks of *Polydesmus complanatus*, L. After Guérin-Meneville's and Curtis's publications on the numerous insects, myriapods, &c., which are found living in the diseased potatoes, he was surprised that the now well-known potato disease should be attributed to these attacks.

The Rev. A. E. Eaton exhibited a patent revolving object-holder, used by mineralogists, affording great facilities in adjusting the position of insects subjected to microscopical examination, thus allowing of the examination of every part without removing the specimen.

Sir Sidney Saunders communicated remarks on the characters of the vegetable-feeding fig-insects.

Mr. E. A. Fitch exhibited leaf-rosette galls of *Cecidomyia viola*, F. Löw, found in Epping Forest on Sept. 23rd last, by Mr. Henry Corder, on *Viola sylvatica*. Dr. Löw described the gnat as new in 1881 (Verh. z.-b. Ges. Wien, xxx. 34), from specimens bred from similarly formed galls on *Viola tricolor*. Mr. Fitch also exhibited a bright red bean-like Aphis gall on a pinna of *Pistacia lentiscus* from Cannes, received from Dr. Cobbold; its maker is probably *Aploneura lentisci*, Licht. ? (cf. Ann. Soc. Esp. Hist. Nat.,

vii. 471-4). A curious new cecidomyioid gall on the woody twigs of *Juniperus* was also exhibited. Mr. Fitch had received specimens two days previously from Mr. W. C. Boyd from Mentone; the galls were very succulent, and greatly resembled a cluster of full-fed *Ixodes* or miniature brown leather pouches attached round the juniper twig, the bunch consisting of galls extending to the length of an inch along the twig; the galls were easily detached from the twig at their bases, and the orange-red gnat larvæ liberated, hence they probably undergo their metamorphoses in the ground.



Mr. H. Goss exhibited specimens of *Pimelia angulata*, Fabr., obtained by Mr. H. B. Forman in the temple of the Sphinx, near the Pyramids of Ghizeh, Egypt.

Mr. A. S. Olliff read a memoir "On a small collection of Clavicorn Coleoptera from North Borneo," made by Mr. W. B. Pryer.

Mr. P. Cameron communicated some "Descriptions of new Genera and Species of Hymenoptera," from the Sandwich Islands, from Britain, and from Brazil.

Mr. W. F. Kirby read some "Notes on new or little-known Species of Hymenoptera, chiefly from New Zealand."

May 2, 1883.—J. W. DUNNING, Esq., M.A., F.L.S., &c., President, in the chair.

Messrs. E. A. Butler (Arnold House, University School, Hastings) and W. H. Miles (33, Paris Street, Palace Road, Lambeth, S.E.) were balloted for and elected Members of the Society.

The President, in the course of an address, observed:—"We this day complete the fiftieth year of our existence. It was on the 3rd May, 1833, that nine gentlemen—Messrs. Children, J. E. Gray, G. R. Gray, Hope, Horsfield, Rudd, Stephens, Vigors, and Yarrell—met and resolved to found the Entomological Society of London. No time was lost; for on the 22nd of the same month the first General Meeting was held at the Thatched House Tavern, the Rev. Wm. Kirby was chosen Honorary President, 103 Members were enrolled, and a Council of thirteen were chosen to complete the organization of the Society and prepare rules for its government. Rooms were taken at No. 17, Old Bond Street, and on the 4th November, 1833, under the Presidency of Mr. Children, the then Secretary of the Royal Society, a code of Bye-Laws was adopted, and our first scientific meeting was held. Of the Original Members, six, and six only, still survive—Prof. C. C. Babington, the Rev. Leonard Jenyns (now Blomefield), Sir Sidney S. Saunders, Mr. W. B. Spence, Mr. G. R. Waterhouse, and Prof. Westwood. Of these Mr. Waterhouse has the additional distinction of having been one of the original Council, and the first Curator of the Society. Our meetings continued to be held at 17, Old Bond Street from 1833 until 1852, when we removed to No. 12, Bedford Row; during nine sessions commencing in 1866, by the kindness of the Linnean Society, we assembled in Burlington House, but our Library remained at Bedford Row. In 1875 the Library and place of meeting were again united in this house; and though the building operations now in progress have prevented us from indulging in any celebration of our Jubilee, we shall soon be in the enjoyment of improved accommodation, and I hope it may be long before the Society has again to change its quarters. 'The Entomological Society of London is instituted for the improvement and diffusion of Entomological Science.' From first to last, this has been our only object. To bring fellow-workers into friendly communication, and facilitate the interchange of ideas, to extract the hidden knowledge of secluded students, to provide a Library for consultation, to encourage observation and experiment, and to publish the results for the benefit of all whom they may concern—such is our aim, the very reason of our being. And I venture to assert that the Society has succeeded in its object. If any be inclined to doubt, I refer him to the thirty volumes of our 'Transactions,' to the record of 'Proceedings' at our more than 600 meetings, as proof of the activity and the unfailing ardour with which the Society has now for half a century devoted itself to the diffusion of entomological science.

"I have to suggest that Prof. Westwood be made titular Life-President of the Society. There is no man to whom we as a body owe so much. An Original Member, he has never failed us; during the crucial period of our childhood he was the motive power, the life and soul of the Society; for fourteen consecutive years he was Secretary, and for part of that time he was Curator also. The Council has seldom been complete without him; he has been Vice-President times without number, and during six years (1851-52, 72-73, 76-77) he was our President. Whilst he resided in or near London, he rarely missed one of our meetings; even Oxford cannot keep him away from us; and there is not a single year from first to last that he has not been a contributor to our 'Transactions.' From 1827 to the present time his pen and his pencil have never been idle; his papers are scattered broadcast over the scientific publications of this and other countries; and to single out a few of his more important works it is enough to mention the 'Introduction to the Modern Classification of Insects' (1839-40), the 'Arcana Entomologica' (1841-45), the 'Cabinet of Oriental Entomology' (1848), the 'Genera of Diurnal Lepidoptera' (1852), and the 'Thesaurus Entomologicus Oxoniensis' (1874). What do we not owe to Westwood's 'Introduction'? has it not been to many of the present generation of entomologists the very fountain and sole source of their scientific views? His labours have ranged over the whole domain of our Science. Specialists may excel in their own particular groups, but as a general entomologist have we a man to compare with him? I ask you to confer upon him a title which will be a standing record of the esteem in which we hold him, and which throughout the evening of his days shall assure him of our affectionate respect."

This proposal was carried by acclamation, and Professor Westwood was declared Honorary Life-President of the Society.

A Special Meeting was then convened, pursuant to a requisition presented to the President and Council, for the consideration of certain proposed alterations in the Bye-Laws, which had been read at the three preceding meetings of the Society. Alterations were decided upon to the effect that in future no Subscriber or Corresponding Member shall be elected; and that every Member who has paid the annual contribution shall be entitled to a copy of the 'Transactions' published during the year.—E. A. FITCH, *Hon. Secretary.*

## NOTICES OF NEW BOOKS.

*A Handbook to the Birds of Burmah, including those found in the adjoining State of Karennee.* By EUGENE W. OATES. Vol. I., roy. 8vo, pp. 431. London: Porter, and Dulau & Co. 1883.

FEW of our readers, especially if they be members of the British Ornithologists' Union, require to be reminded that Mr. Oates has long been engaged on this important work, which a residence of some years in Pegu and a close study of the avifauna of British Burmah have qualified him to undertake. On his return to England two years since he brought back with him a large collection of bird-skins, with voluminous field-notes relating to all the species collected or observed; and the revision of all this material has resulted in the appearance of the first volume of his projected work.

In this volume 400 species are dealt with, or, in other words, just half the number which have been ascertained to occur in British Burmah and the State of Karennee. This estimate, it may be observed, is considerably in excess of that set forth in Blyth's 'Catalogue of the Mammals and Birds of Burmah,' published in 1875 (wherein only 660 species of birds are included), and shows the great advance which has been made since that date in the study of Burmese Ornithology. This is due to the labours of such excellent field-naturalists as Mr. Oates and his fellow-workers in the same field, Mr. Davison, Major Lloyd, Major Feilden, and Captain Wardlaw Ramsay. Undoubtedly very much also is due to the co-operation of Mr. Allan Hume, whose Indian journal, 'Stray Feathers,' has been so useful in diffusing knowledge and encouraging the study of Indian Ornithology not only in India, but wherever attention is scientifically bestowed upon this most attractive class of Vertebrates.

We have only to turn to some of the annual volumes of 'Stray Feathers' and 'The Ibis' to see how the above-named naturalists, amongst others, have been gradually paving the way for the preparation of a comprehensive work on the Birds of Burmah; and, in glancing over these volumes, we cannot help noticing the name of one zealous Indian ornithologist, now no



longer amongst us, who would have hailed with delight the appearance of the present work, and who would, moreover, have helped generously (as he was always ready to do) to make it still more perfect. It need scarcely be said that we refer to the late Marquis of Tweeddale, who himself contributed to 'The Ibis,' 'The Annals,' the 'Proceedings' of the Zoological Society, and Blyth's 'Catalogue' much valuable information touching the Ornithology of Burmah.

Until we have before us Mr. Oates' second volume, in which doubtless he will criticise, in his 'Introduction,' the character of of the Burmese avifauna, it would perhaps be premature to discuss this question. We do not, however, forget what Lord Tweeddale has written thereon in 'The Ibis' for October, 1875, and may appropriately quote his last paragraph as follows:—

"The word Burma cannot in any sense be used to express a well-defined zoological province or subprovince. In Blyth's 'List' it is employed for all those regions which formerly constituted the Burmese Empire, three of which within the last fifty years have been ceded to Great Britain, namely, Arracan, Tenasserim, and Pegu. It is bordered by countries possessing ornithological features more or less peculiar; and where the Burmese territory comes in contact with any one of these countries, it is, as might be supposed, more or less peopled by their characteristic forms. But the presence of peculiar Javan forms, unknown in Malacca or Sumatra, if it be a fact, is a marked characteristic, which cannot be accounted for by contact of present boundaries."

Mr. Oates, in his first volume, deals solely with the *Passeres*, commencing with the *Turdidæ*, according to the latest (though not universally approved) fashion. Opening the book at random we find a page (p. 15) devoted to "*Erithacus cæruleculus*, the Arctic Blue-throated Robin." Why "Robin," may we ask? Why not "Bluethroat," as we say "Whitethroat"? Again, why "Arctic"? for Mr. Oates says "this bird has a most extensive range. In summer it is found in Northern Europe and Asia; in the latter continent as far south as the Himalayas. In winter it migrates south, and ranges over the whole of Europe, North Africa, and Southern Asia." As Jerdon identified this bird with *Cyanecula suecica* (Linnaeus), it would have been just as well had Mr. Oates pointed out in what respects it differs from that species, or, if not different, why the specific name bestowed by Linnaeus has been superseded by that of Pallas.

With Mr. Oates' mode of treatment we have no fault to find. He first gives the name of the species which he supposes to have priority, followed by the synonymy. He then gives descriptions of the male, female, and young, followed by dimensions, and concludes with brief notes on the localities where it has been found in British Burmah, and on its general range so far as ascertained.

Amongst the 400 species of Burmese birds noticed in this volume we find several that are very familiar to us in this country, notably the White- and Grey-headed Wagtails, the Tree Pipit, Common Swallow, *Hirundo rustica*, which resides in Burmah all the year round, and there meets the American Barn Swallow, *H. horreorum*; the Sand Martin, which seems to be well-nigh cosmopolitan in its range, and the Tree Sparrow, which is the Common Sparrow of the Burmese. Amongst other species which occasionally find (or lose) their way westward to England, we notice the Blue Rock Thrush, Bluethroat, Yellow-browed Willow Warbler, Red-throated Pipit, Rose Finch, *Carpodacus erythrinus*, and Little Bunting, *Emberiza pusilla*.

Those who desire to learn something about the range eastward of these occasional stragglers to Great Britain should consult the pages of Mr. Oates' 'Handbook,' where, on these and many other points on which we have not space to dilate, they will find much to interest them.

We shall look forward with pleasure to the appearance of the second volume of this work, not only because it will contain an account of species more generally interesting to stay-at-home naturalists and sportsmen, but because in it we shall hope to find much that will be valuable in the shape of generalisations from the data which Mr. Oates has so assiduously collected.

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*The Fisheries of the Adriatic, and the Fish thereof: a Report of the Austro-Hungarian Sea Fisheries; with a detailed description of the Marine Fauna of the Adriatic Gulf.* By G. L. FABER, H. M. Consul, Fiume. 4to, pp. 292, with illustrations. London: Quaritch. 1883.

THE publication of this handsome quarto on the Adriatic Fisheries has been singularly well-timed, since it makes its

appearance at a season when public attention is engrossed with the varied contents of the International Fisheries Exhibition. It is topographical, historical, and descriptive. It furnishes an account of the fishing districts of the Adriatic, the seasons for fishing, and the produce. Then comes a description of the boats used, and of the mode of making, tanning, and mounting the various nets employed, with woodcuts showing the different sorts of meshes. The Fish-markets have a chapter to themselves, while another is devoted to the methods in vogue for curing and cooking fish; the volume concluding with a somewhat lengthy account (extending over 100 pages) of the Fauna of the Adriatic, including special lists of the fishes, both fresh-water and marine, and some useful appendices.

The contents of this work, upon which a good deal of care seems to have been bestowed, may be said to have a two-fold value. They afford an interesting insight into the mode of life, shifts, and expedients of fishermen upon a far-off shore, and by showing us the resources at their command, and their mode of utilising the same, suggest practical hints for the improvement of our own fisheries.

The attention of pisciculturists is particularly directed to the Italian mode of rearing in enclosed waters the fry of mullet, eels, and flat-fishes until they attain a marketable size, and yield a direct and immediate profit. The wisdom of this policy seems so evident that it is surprising that it has not been adopted in this country.

We commend the perusal of this volume especially to members of the newly-formed Piscicultural Society, and to naturalists who would form some acquaintance with the singularly varied fauna of the Adriatic.

The introductory remarks by Dr. Albert Günther, F.R.S., give an additional recommendation to the volume beyond its intrinsic merits; while the excellency of the type and illustrations, with the delicate binding of pale blue and silver, will probably cause many readers to exchange a feeling of curiosity for a feeling of real interest in the subject-matter.

We presume it will find a place amongst the volumes on fish and fishing on view at the International Fisheries Exhibition.

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*Bibliotheca Piscatoria: a Catalogue of Books on Angling, the Fisheries, and Fish-culture, with Bibliographical Notes, and an Appendix of Citations touching on Angling and Fishing from old English Authors.* By T. WESTWOOD and T. SATCHELL. 8vo, pp. 397. London: W. Satchell. 1883.

WE have here another book on Angling, though of a very different character to that just noticed. It is a second edition of a small duodecimo of 82 pages which appeared some twenty years ago, and has long been out of print. The present volume of nearly 400 pages shows what extensive additions have been made to the original work; but, as the authors state in their preface, it is not only the addition of titles that they have aimed at, but extreme accuracy in transcribing those titles.

The volume, they observe, "contains nearly six times the matter of its predecessor. But it is in method not in bulk that we claim to have chiefly advanced. Knowing that the value of a bibliography depends solely on its precision and accuracy, we have endeavoured to set forth the title of every book registered in its literal form, and to furnish those minute particulars touching printers, publishers, pagination, illustrations, &c., which serve to show the successive changes through which the most popular angling books have passed, and enable the collector to prove the completeness of the works in his possession."

The volume is divided into three sections. The first, occupying 270 pages, comprises books which treat purely of angling; the second, extending over about sixty pages, relates only to fisheries; and the third contains books on pisciculture, to which some eighty odd pages are devoted. This is followed by an appendix of quotations from poets and dramatists relating to fishing, and the volume concludes with twenty-four pages of additions and corrections which were noted too late to come into their proper place.

As not only every work, but every edition to which access could be obtained, has been carefully examined by Mr. Satchell, some idea may be formed of the immense labour involved in the preparation of this volume. It will not only interest a large number of those who delight in angling, but forms a most useful work of reference for bibliophiles, who, we imagine, will not be slow to secure copies.

